In the Specification

Please amend the specification of this application as follows:

Rewrite the paragraph at page 2, line 15 to page 4, line 8 as follows:

--Hearing aids, although including an amplifier and a speaker, also include features which are at odds with the typical concert or public address loudspeaker. For example, whereas an amplifier and speaker system used for concerts and the performing arts demands extreme amplification and huge speakers, the smaller the size of the hearing aid the better. Also ~~or~~ as was discussed above, where speaker equalization or a flat frequency response of the speaker or sound system is demanded for concerts and public performance, a properly tuned hearing aid does just the opposite. That is, the properly tuned hearing aid carefully avoids amplification of those frequencies at which an individual has acceptable or normal hearing while at the same time providing substantial amplification to frequencies at which the individual is impaired. It is, of course, possible that an individual's hearing loss could be the same across the audio spectrum in which case a hearing aid with a flat response might be desirable. Typically, however, hearing loss is frequency dependent, and for most individuals, the loss is progressively worse at frequencies at the high end of the audio spectrum. Although these differences result in opposite demands for a public sound system and an individual's hearing aid, much of the technical theory required to satisfy these opposite demands is the same. For example, whereas sound system equalization schemes may be used to compensate for sound power or volume output variations at different frequencies to obtain a flat sound system response, the same scheme may be used for sound system "unequalization." That is, the scheme intentionally varies the power output of the hearing aid at ~~varies~~ various frequencies to achieve an output which is intentionally not

equalized. This compensates for the wearer's impairment so that in most applications, the wearer perceives or hears as flat a response as is possible over the audio spectrum. However, as will be discussed hereinafter, a "hearing aid" may also be used by an individual with normal hearing for purposes of "enhancing" the individual's hearing ability above normal with respect to specific sounds, frequencies or environments. For these uses, the "hearing aid" will not strive to provide the user with a "flat" response over all frequency bands, but may instead intentionally peak the hearing ability at selected frequencies. Consequently, it will be appreciated by one skilled in the art that schemes and discussions related to equalization of individual sound systems are equally applicable to the "unequalization" required by individual hearing aids. Therefore, although much of the following discussion refers to equalization of sound systems by selective frequency dependant amplification, a person skilled in the art will recognize that the technology for achieving frequency dependent amplification to achieve "unequalization" as is necessary for tuning hearing aids is the same.--

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Rewrite the paragraph at page 5, line 15 to page 6, line 8 as follows:

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--The present invention provides apparatus and methods for generating digital filters for tuning a hearing aid. Therefore, according to one embodiment, first digital data is provided for a tolerance range for a target response curve of sound level versus frequency for the hearing aid. Second, digital data is provided representing an "audiogram" or a response curve of an individual's sound level perception versus frequency. The first digital data is compared with the second digital data and those responses of the audiogram not within the tolerance range are determined. The parameters for determining a digital audio filter are then

generated, and the resulting digital audio filter is applied to the hearing aid to generate a compensated audiogram or response curve. According to other embodiments, iterative audiograms and the determination of one or more additional filters as well as fine tuning of the filter continues until the hearing aid is optimized for the individual. For example, the frequency amplitude and bandwidth of the digital audio filters are automatically optimized until the compensated response curve is within the tolerance range, ~~of~~ or a predetermined limit on the number of digital audio filters has been reached, whichever occurs first.--

A2

Rewrite the paragraph at page 6, lines 17 to 19 as follows:

--Fig. 4 is a graph showing a typical air threshold response audiogram of an individual~~, and Figure 4A is a graph showing a bone conduction threshold response~~.--

A3

Rewrite the paragraph at page 8, lines 10 to 23 as follows:

--Currently, hearing aids are becoming increasingly digital. A conceptual digital system 300 is shown in Figure 3. This digital hearing aid 300 is actually comprised of both analog and digital elements since environmental sound inputs and the speaker system ~~340~~ 360 is necessarily analog. However, this is referred to as a digital system since the audio signals are all digital prior to reconstruction and playback. The digital hearing aid 300 is comprised of a microphone 310 for receiving sounds occurring in the environment of the individual wearing the hearing aid. The signal output from microphone 310 is provided to an analog to digital converter 320, and then to a digital audio processing function 340, where it is digitally processed. Such digital processing typically includes tuning or selected amplification of selected frequency bands. Once the digital processing is completed, the signal is converted back to analog by a digital-to-analog converter ("D/A")

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350. The resulting analog signal is then provided to hearing aid speaker 360.--

Rewrite the paragraph at page 11, line 8 to page 12, line 9 as follows:

--According to a first embodiment, the audiogram 410 shown in Figure 4 is generated by measuring an individual's ability to hear sounds at different frequencies across the audio spectrum by the air threshold response equipment 550 such as that shown in Figure 5. In generating such a curve or audiogram, sound equipment 550 generates an audio electrical signal and sends it to a pair of left and right speakers 555 and 560 mounted in a headset 570. The audio signal is a tone at a known frequency which starts at such a low power level that it is inaudible to substantially everyone. However, as mentioned above, bone conduction threshold response ~~such as shown in the audiogram of Figure 4A,~~ may also be used to tune the hearing aid. The power level or volume slowly increases until the individual being tested provides an indication that he or she hears the tone such as by a button switch 575. A different frequency is then selected and the process is repeated until the entire audio spectrum has been covered. As discussed, the audio signal is received via a speaker 555 or 560 located in proximity to or covering an individual's ear, and the resulting indication by the individual that the sound has been heard is sent to the sound processing equipment 550. The information is then processed to compute the response level across the audio spectrum and provided to a recorder or printer 580 to generate a corresponding sound level response curve or audiogram, such as curve 410 in Figure 4. The system 500 is typically deployed inside a sound room 580 which is insulated from outside sounds, and also absorbs sounds so as to prevent sound reflections. Consequently, the only sound the

A5 individual should hear is from the earphones. This eliminates the distraction of echoes and other environmental effects.--

Rewrite the paragraph at page 26, lines 10 to 11 as follows:

A6 --Generate coefficients and optimize the new filter using the single filter optimizer described above in conjunction with Figure ~~11~~ 10.--